

Brian R. Gibney

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Appointments Associate Professor of Chemistry Brooklyn College **September 1, 2008**
Associate Professor of Chemistry Columbia University **July 1, 2005**
Assistant Professor of Chemistry Columbia University **July 1, 2000**

EDUCATION

Education **NIH Postdoctoral Fellow** **1995-2000**
University of Pennsylvania, Johnson Research Foundation, Philadelphia, PA
Advisor: Prof. P. Leslie Dutton
Topic: Design and Structural Characterization of Redox Protein
Maquettes; Spectroscopic studies of cytochrome *bc*₁ complex

Ph.D., Chemistry **December 1994**
University of Michigan, Ann Arbor, MI
Advisor: Prof. Vincent L. Pecoraro
Dissertation Title: 12-Metallacrown-4: A Structural and Functional
Inorganic Analogue of 12-Crown-4.

B.S., Chemistry (Honors, ACS certified) **April 1990**
The Florida State University, Tallahassee, FL

Honors and Affiliations Jacques Edward Levy Professor of Analytical Chemistry (2010-present)
Paul Saltman Lecturer (2007)
Camille Dreyfus Teacher-Scholar (2005-2010)
Johnson Research Foundation Fellow (2001)
Young Bioenergeticist Award, Biophysical Society (1997)
Individual National Research Service Award, NIH (1995-1997)
Smeaton Research Fellowship (1993)
Baer Teaching Fellowship (1990)

American Chemical Society,
Division of Inorganic Chemistry
New York Local Section
Chair, Brooklyn Subsection (2009-2010)
Webmaster, www.newyorkacs.org (2007-present)
Director-at-Large (2006-2007)

Royal Society of Chemistry
The Society for Biological Inorganic Chemistry

SCHOLARSHIP

Invited Lectures

External Invited Lectures: Conferences

221 st Annual Meeting of the American Chemical Society San Diego, CA	April 4, 2001
National Science Foundation Inorganic Workshop Santa Fe, NM	April 25, 2002
12th International Congress on Photosynthesis (Photosynthesis 2001) Brisbane, Australia	August 22, 2001
Graduate Research Seminar Gordon Research Conference Ventura, CA	January 25, 2002
DARPA Workshop on Protein Folding and Design Arlington, VA	October 28, 2002
11 th International Conference on Bioinorganic Chemistry (ICBIC 11) Cairns, Australia	July 23, 2003
Chairmen of the European Research Council's Chemistry Committees (CERC3) Young Chemist's Workshop on Biocatalysis Erlangen, Germany	March 24, 2004
Northeast Regional Meeting of the American Chemical Society Rochester, NY	November 3, 2004
New York Academy of Science Inorganic Minisymposium New York, NY	December 15, 2004
Metalloprotein and Protein Design Chicago, IL	July 29, 2005
Gordon Research Conference, Metals in Biology, Paul Saltman Lecturer Ventura, CA	January 30, 2007
Boston Regional Inorganic Conference Storrs, CT	July 28, 2007
2 nd Latin American Protein Society Meeting Acapulco, Mexico	November 6, 2007
Mid-Atlantic Regional Meeting of the American Chemical Society Bayside, NY	May 20, 2008
Trace Elements in Man and Animals – TEMA 13 Pucón, Chile	November 10, 2008

External Invited Lectures: Universities

Memorial Sloan-Kettering Cancer Center Biochemistry/Biophysics	November 10, 2000
Texas A&M University Chemistry	April 16, 2001
Hunter College	

Chemistry	September 21, 2001
Scripps Research Institute	
Biochemistry and Molecular Biophysics	May 30, 2002
University of Nebraska	
Chemistry	September 27, 2002
Stockholm University	
Biochemistry and Biophysics	April 10, 2003
City College of New York	
Chemistry	October 15, 2003
St. John's University	
Chemistry	October 23, 2003
North Dakota State University	
Chemistry	December 4, 2003
Max Planck Institute for Bioinorganic Chemistry	
Chemistry	March 29, 2004
University of Kansas	
Chemistry	April 16, 2004
Tufts University	
Chemistry	April 27, 2004
University of Cincinnati	
Chemistry	October 12, 2004
Ohio State University	
Chemistry	October 13, 2004
Michigan State University	
Chemistry	November 8, 2004
University of Michigan	
Chemistry	November 9, 2004
Wayne State University	
Chemistry	November 11, 2004
University of Delaware	
Chemistry	December 8, 2004
University of Pennsylvania	
Chemistry	February 15, 2004
Purdue University	
Chemistry	March 22, 2005
University of Iowa	
Chemistry	April 6, 2005
Iowa State University	
Chemistry	April 8, 2005
Stanford University	
Chemistry	May 17, 2005
UC- Santa Cruz	
Chemistry	May 18, 2005
UC-Davis	
Chemistry	May 19, 2005

Cornell University Chemistry	September 22, 2005
University of Illinois Chemistry	September 29, 2005
Massachusetts Institute of Technology Chemistry	October 18, 2005
Boston University Chemistry	November 14, 2005
University of Miami (Ohio) Chemistry	December 8, 2005
Haverford College Chemistry	January 20, 2006
University of Massachusetts Chemistry	March 2, 2006
University of Utah Chemistry	October 10, 2006
Utah State University Chemistry	October 11, 2006
Pace University Chemistry	October 23, 2006
New York University Chemistry	November 3, 2006
Indiana University Chemistry	March 23, 2007
University of Western Ontario Chemistry	May 11, 2007
St. John's University Chemistry	March 17, 2009
Yeshiva University Chemistry	April 23, 2009
St. Lawrence University Chemistry	September 29, 2009
State University of New York - Potsdam Chemistry	September 29, 2009
Long Island University Biology	April 12, 2010

Publications at Brooklyn College

Deng, B.; Parthasarathy, S.; Wang, W.; Gibney, B.R.; Battaile, K.P.; Lovell, S.; Benson, D.R.; Zhu, H. "Unique Heme Pocket in Human Ncb5or and Structural Basis for Intra-Domain Electron Transfer", *J. Biol. Chem.* **2010**, in press.

Gibney, B.R. "Metallopeptides as Tools to Understand Metalloprotein Folding and Stability", in *Protein Folding and Metal Ions - Mechanisms, Biology and Disease*, Gomes, C. and Wittung-Stafshede, P. Eds., Taylor & Francis, London, **2010**, in press.

Publications at Columbia University

Zhuang, J.; Kinloch, R.; Dawson, J.H.; Baldwin, M.J.; Gibney, B.R. "Thermodynamic and Spectroscopic Comparison of Histidine Analogues as Nonnatural Amino Acids for Designed Heme Proteins", *J. Am. Chem. Soc.*, manuscript in preparation.

Westerlund, K.; Moran, S.D.; Privett, H.K.; Hay, S.; Jarvet, J.; Gibney, B.R.; Tommos, C.T. "Making a single-chain four-helix bundle for redox chemistry studies", *Proteins: Engineering, Design and Selection*, **2008**, 21, 645-652.

Reedy, C.J.; Elvekrog, M.M.; Gibney, B.R. "Development and Analysis of a Heme Protein Structure-Electrochemical Function Database" *Nucleic Acids Research*, **2008**, 36, D307-D313.

Reddi, A.R.; Guzman, T.; Breece, R.M.; Tierney, D.L.; Gibney, B.R. "Deducing the Energetic Cost of Protein Folding in Zinc Finger Proteins Using Designed Metallopeptides", *J. Am. Chem. Soc.*, **2007**, 129, 12815-12827.

Thompson, A. M.; Reddi, A.R.; Shi, X.; Goldbeck, R.A.; Moenne-Loccoz, P.; Gibney, B.R.; Holman, T.R. "Characterization of the Role of Heme-binding in the Yeast Protein Dap1p", *Biochemistry*, **2007**, 46, 14629-12637.

Reddi, A.R.; Gibney, B.R. "The Role of Protons in the Thermodynamic Contribution of a Zn(II)-Cys₄ Site Toward Protein Stability", *Biochemistry*, **2007**, 46, 3745-3758.

Reddi, A.R.; Reedy, C.J.; Mui, S.; Gibney, B.R. "Thermodynamic Investigation into the Mechanisms of Proton-Coupled Electron Transfer in Heme Protein Maquettes" *Biochemistry*, **2007**, 46, 291-305.

Reddi, A.R.; Gibney, B.R. "The Role of Protons in the Thermodynamic Contribution of a Zn(II)-Cys₄ Site Toward Protein Stability", *Biochemistry*, **2007**, 46, 3745-3758.

Reddi, A.R.; Reedy, C.J.; Mui, S.; Gibney, B.R. "Thermodynamic Investigation into the Mechanisms of Proton-Coupled Electron Transfer in Heme Protein Maquettes" **Biochemistry**, **2007**, 46, 291-305.

Gibney, B.R.; Franklin, S.J. "Preface: Forum on Biomolecular Design in Inorganic Chemistry", **Inorg. Chem.**, **2006**, 45, 9927-9929.

Petros, A.K.; Reddi, A.R.; Kennedy, M.L.; Hyslop, A.G.; Gibney, B.R. "Femtomolar Zn(II) Affinity in a Peptide Ligand Designed to Model Thiolate-Rich Metalloprotein Active Sites", **Inorg. Chem.**, **2006**, 45, 9941-9958.

Riley, E.A.; Petros, A.K.; Smith, K.A.; Gibney, B.R.; Tierney, D.L. "Frequency-Switching Inversion-Recovery: Application to Severely Hyperfine Shifted NMR in aqueous Solution", **Inorg. Chem.**, **2006**, 45, 10016-10018.

Zhuang, J.; Reddi, A.R.; Wang, Z.; Khodaverdian, B.; Hegg, E.L.; Gibney, B.R. "Evaluating the Roles of the Heme *a* Sidechains in Cytochrome *c* Oxidase Using Designed Heme Proteins", **Biochemistry**, **2006**, 45, 12530-12538.

Hong, J.; Kharenko, O.A.; Petros, A.K.; Gibney, B.R.; Ogawa, M.Y. "A Miniature Cu(I) Metalloprotein Displays Unusual Electron-transfer Reactivity: Collisional Electron-transfer in the Inverted Marcus Region", **Angew. Chem. Intl. Ed.**, **2006**, 45, 6137-6140.

Zhuang, J.; Amoroso, J.H.; Kinloch, R.; Dawson, J.H.; Baldwin, M.J.; Gibney, B.R. "Evaluation of electron-withdrawing group effects on heme binding in designed proteins: Implications for heme *a* in cytochrome *c* oxidase", **Inorg. Chem.**, **2006**, 45, 4685-4694.

Yu, B.; Edstrom, W.C.; Benach, J.; Hamuro, Y.; Weber, P.C.; Gibney, B.R.; Hunt, J.F. "Substrate Recognition and Redox Chemistry of AlkB Repair Enzyme Reveled by Crystal Structures", **Nature**, **2006**, 439, 879-884.

Eichenbaum, K.D.; Thomas, A.A.; Eichenbaum, G.M.; Gibney, B.R.; Needham, D.; Kiser, P.F. "Oligo- α -hydroxy Ester Cross-linkers: Impact of Cross-Linker Structure on Biodegradable hydrogel Networks", **Macromolecules**, **2005**, 38, 10757-10762.

Gibney, B.R.; Tommos, C.T. "De novo Protein Design in Respiration and Photosynthesis", **Adv. in Photosynthesis and Respiration**, T. Wydrzynski and K. Satoh, eds., Springer, New York, **2006**, Ch. 22, 729-751.

Zhuang, J.; Amoroso, J.H.; Kinloch, R.; Dawson, J.H.; Baldwin, M.J.; Gibney, B.R. "Design of a Five-coordinate Heme Protein Maquette: A Spectroscopic Model of deoxyMyoglobin", **Inorg. Chem.**, **2004**, 43, 8218-8220.

Petros, A.K.; Shaner, S.E.; Costello, A.L.; Tierney, D.L.; Gibney, B.R. "Comparison of Cysteine and Penicillamine Ligands in a Co(II) Maquette", **Inorg. Chem.**, **2004**, 43, 4793-4795.

Strazalka, J.; Kneller, L.R.; Gibney, B.R.; Satija, S.; Majkrzak, C.F.; Blaise, J.K. "Specular Neutron Reflectivity and the Structure of Artificial Protein Maquettes Vectorally Oriented at Interfaces" **Phys. Rev. E**, **2004**, 70, 061905-01-061905-10.

Reedy, C.J.; Gibney, B.R. "Heme-Protein Assemblies", **Chem. Rev.** **2004**, 101, 617-649.

Kennedy, M.L.; Petros, A.K.; Gibney, B.R. "Cobalt(II) and Zinc(II) Binding to a Ferredoxin Maquette" **J. Inorg. Biochem.**, **2004**, 98, 727-732. (ICBIC 11 Special Issue).

Gibney, B.R. "Ferredoxin and Ferredoxin-Heme Maquettes / Proton Coupling to [4Fe-4S]^{2+/+} and [4Fe-4Se]^{2+/+} Oxidation/Reduction in a Designed Protein", **ChemTracts-Inorganic Chemistry**, **2003**, 16, 263-271. (Invited Group Highlight)

Reedy, C.J.; Kennedy, M.L.; Gibney, B.R. "Thermodynamic Characterization of Ferric and Ferrous Haem Binding to a Designed Four- α -Helix Protein" **Chem. Commun.**, **2003**, 570-571.

Privett, H.K.; Reedy, C.J.; Kennedy, M.L.; Gibney, B.R. "Nonnatural Amino Acid Ligands in Heme Protein Design", **J. Am. Chem. Soc.**, **2002**, 124, 6828-6829.

Kennedy, M.L.; Gibney, B.R. "Proton Coupling to [4Fe-4S]^{2+/+} and [4Fe-4Se]^{2+/+} Oxidation/Reduction in a Designed Protein" **J. Am. Chem. Soc.**, **2002**, 124, 6826-6827.

Daugherty, R.G.; Wasowicz, T.; Gibney, B.R.; DeRose, V.J. "Design and Spectroscopic Characterization of Peptide Models for the Plastocyanin Copper-binding Loop", **Inorg. Chem.** **2002**, 41, 2623-2632. (Featured on Cover of Issue)

Kennedy, M.L.; Gibney, B.R. "Metalloprotein and Redox Protein Design" **Curr. Opin. Struct. Biol.** **2001**, 11, 485-490.

Publications Prior to Independent Career

Huang, S.S.; Gibney, B.R.; Stayrook, S.E.; Dutton, P.L.; Lewis, M. "X-ray Structure of a Maquette Scaffold" **J. Mol. Biol.**, **2003**, 326, 1219-1225.

Gibney, B.R.; Pecoraro, V.L. "Use of Salicyl- and Naphthoylhydroxamate Complexes in Preparation of Manganese and Copper 12-Metallacrown-4 Complexes: Mn(II)(Acetate)₂ [Mn(III)(Salicylhydroximate)]₄ and (tetramethylammonium)₂ [Cu(II)₅(naphthoylhydroximate)₄]," **Inorganic Syntheses**, vol. 33, McGraw-Hill Book Company, Inc., New York, **2002**, 70-74.

Chen, X.; Discher, B.M.; Pilloud, D.L.; Gibney, B.R.; Moser, C.C.; Dutton, P. L. "De novo Design of a Cytochrome b Maquette for Electron Transfer and Coupled Reactions on Electrodes", **J. Phys. Chem. B**, **2002**, 106, 617-624.

Gibney, B.R.; Huang, S.S.; Skalicky, J. J.; Fuentes, E.J.; Wand, A. J.; Dutton, P. L. "Hydrophobic Modulation of Heme Properties in Heme Protein Maquettes", **Biochemistry**, **2001**, 40, 10550-10561.

Ugulava, N.B.; Gibney, B.R.; Jarrett, J.T. "Biotin Synthase Contains Two-Distinct Iron-Sulfur Cluster Binding Sites: Chemical and Spectroelectrochemical Analysis of Iron-Sulfur Cluster Interconversions", **Biochemistry**, **2001**, 40, 8343-8451.

Kennedy, M.L.; Silchenko, S.; Houndonougbo, N.; Gibney, B.R.; Dutton, P.L.; Rodgers, K. R.; Benson, D. R. "Model Hemoprotein Reduction Potentials: The Effects of Histidine to Iron Coordination Equilibrium ", **J. Am. Chem. Soc.**, **2001**, 123, 4635-4636.

Grosset, A.M.; Gibney, B.R.; Rabanal, F.; Moser, C.C.; Dutton, P.L. "Proof of Principle in a De Novo Designed Synthetic Protein Maquette: An Allosterically Regulated, Charge Activated Conformational Switch in a Tetra- α -Helix Bundle", **Biochemistry**, **2001**, 40, 5474-5487.

Gibney, B.R.; Dutton, P.L. "*De novo* Design and Synthesis of Heme Proteins" **Adv. Inorg. Chem.**, Mauk, A. G.; Sykes, A. G. eds., Academic Press, New York, **2001**, vol 51, 409-455.

Shifman, J.M; Gibney, B.R.; Sharp, R.E.; Dutton, P.L. "Heme Redox Potential Control in *de novo* Designed Four- α -Helix Bundle Proteins", **Biochemistry**, **2000**, 39, 14813-14821.

Dutton, P.L.; Ohnishi, T.; Darrouzet, E.; Leonard, M.A.; Sharp, R.E.; Gibney, B.R.; Daldal, F.; Moser, C.C. "Coenzyme Q Oxidation-Reduction Reactions in Mitochondrial Electron Transport", Chapter 4 in **Coenzyme Q: Molecular Mechanisms in Health and Disease**, Quinn, P.E.; Kagan, V.J. eds., CRC Press, Boca Raton, Fl., **2000**, 65-82.

Gibney, B.R.; Isogai, Y.; Reddy, K. S.; Rabanal, F.; Grosset, A. M.; Moser, C. C.; Dutton, P. L. "Comparison of Heme A and Heme B in a designed four- α -helix bundle: Implications for a Cytochrome *c* Oxidase Maquette", **Biochemistry**, **2000**, 39, 11041-11049.

Ugulava, N.B.; Gibney, B.R.; Jarrett, J.T. "Iron-Sulfur Cluster Interconversion in Biotin Synthase: Dissociation and Reassociation of Iron is Required for Conversion of [2Fe-2S] to [4Fe-4S] Clusters" **Biochemistry**, **2000**, 39, 5206-5214.

Sharp, R.E.; Palmitessa, A.; Gibney, B.R.; White, J.L.; Wan, J. T.; Moser, C.C.; Daldal, F.; Dutton, P. L. "Probing the cytochrome *bc*₁ complex Q_o site mechanism using weak binding inhibitors" in **Photosynthesis: Mechanisms and Effects**, 1999, G. Garab, Ed., Kluwer Academic Publishers, Dordrecht.

Moser, C.C.; Sharp, R.E.; Gibney, B.R.; Isogai, Y.; Dutton, P. L. "Synthetic protein maquette design for light activated intraprotein electron transfer" in **Photosynthesis: Mechanisms and Effects**, 1999, G. Garab, Ed., Kluwer Academic Publishers, Dordrecht.

Sharp, R.E.; Gibney, B.R.; Palmitessa, A.; White, J.L.; Dixon, J.; Moser, C.C.; Daldal, F.; Dutton, P. L. "Effect of Inhibitors on the Ubiquinone Binding Capacity of the Primary Energy Conversion Site in *Rhodobacter capsulatus* Cytochrome *bc*₁ Complex", **Biochemistry**, **1999**, 38, 14973-14980.

Chen, X.; Moser, C. C.; Pilloud, D.L.; Gibney, B.R.; Dutton, P. L. "Engineering Oriented Heme Protein Maquette Monolayers Through Surface Charge Distribution Patterns", **J. Phys. Chem. B**, **1999**, 103, 9029-9037.

Sharp, R.E.; Palmitessa, A.; Gibney, B.R.; Moser, C.C.; Dutton, P. L. "Probing the ubiquinone primary energy conversion site in the *Rhodobacter capsulatus* cytochrome *bc*₁ complex", **Biochemical Society Transactions**, **1999**, 27, 572-576.

Sharp, R.E.; Moser, C.C.; Gibney, B.R.; Dutton, P. L. "Primary Steps in the Energy Conversion Reactions of the Cytochrome *bc*₁ Complex Q_o Site", **J. Bioenerg. Biomembr.**, **1999**, 31, 225-233.

Gibney, B.R.; Dutton, P. L. "Histidine Placement in *De novo* Designed Heme Proteins", **Protein Science**, **1999**, 8, 1888-1898.

Mulholland, S. E.; Gibney, B.R.; Rabanal, F.; Dutton, P. L. "Determination of Non-Ligand Amino Acids Critical to [4Fe-4S]^{2+/+} Assembly in Ferredoxin Maquettes", **Biochemistry**, **1999**, 38, 10442-10448.

Skalicky, J. J.; Gibney, B.R.; Rabanal, F.; Bieber-Urbauer, R. J.; Dutton, P. L.; Wand, A. J. "Solution Structure of a designed four- α -helix bundle maquette scaffold", **J. Am. Chem. Soc.**, **1999**, 121, 4941-4951.

Gibney, B.R.; Rabanal, F.; Skalicky, J. J.; Wand, A. J.; Dutton, P. L. "Iterative Protein Redesign", **J. Am. Chem. Soc.**, **1999**, 121, 4952-4960.

Sharp, R. E.; Palmitessa, A.; Gibney, B.R.; Moser, C. C.; Daldal, F; Dutton, P. L. "Correlation Between Cytochrome *bc*₁ Structure and Function: Kinetic and Spectroscopic Observations on Q_o Site Occupancy and Dynamics", **The Phototrophic Prokaryotes - Proceedings of the IX Int. Symp. on Phototrophic Prokaryotes**, Peschek, G. A.; Loefflhardt, W.; Schmetterer, G. eds., Plenum, New York, **1999**, 241-250.

Sharp, R. E.; Palmitessa, A.; Gibney, B.R.; White, J.L.; Moser, C. C.; Daldal, F; Dutton, P. L. "The ubiquinone Binding Capacity of *Rhodobacter capsulatus* Cytochrome *bc*₁ Complex: Effect of Diphenylamine, A Weak Q_o site Inhibitor", **Biochemistry**, **1999**, 38, 3440-3446.

Daniels, S.B.; Hantman, S.F.; Solé, N. A.; Gibney, B.R.; Rabanal, F.; Kates, S.A. "PioneerTM: A Continuous-flow Peptide Synthesis System", **Peptides** **1996**, Ramage, R.; Epton, R. eds.; Mayflower Scientific, Ltd.; Kingswinford, England, **1998**, 323-324.

Valkova-Valchanova, M.; Saribas, A.S.; Gibney, B.R.; Dutton, P. L.; Daldal, F. "Isolation and Characterization of a Two Subunit Cytochrome *b-c*₁ Subcomplex from *Rhodobacter capsulatus* and Reconstitution of its Ubiquinone Oxidation (Q_o) Site with purified Fe-S Protein Subunit", **Biochemistry**, **1998**, 37, 16242-16251.

Mulholland, S. E.; Gibney, B.R.; Rabanal, F.; Dutton, P. L. "Characterization of the Fundamental Protein Ligand Requirements of [4Fe-4S]^{2+/+} Clusters Using Sixteen Amino Acid Peptide Maquettes", **J. Am. Chem. Soc.**, **1998**, 120, 10296-10302.

Sharp, R. E.; Palmitessa, A.; Gibney, B.R.; Moser, C. C.; Daldal, F.; Dutton, P. L. "Non-inhibiting perturbation of the primary energy conversion site (Q_o site) in *Rhodobacter capsulatus* ubiquinol: cytochrome *c* oxidoreductase", **FEBS Lett.**, **1998**, 431, 423-426.

Skalicky, J. J.; Bieber, R. J.; Gibney, B.R.; Rabanal, F.; Dutton, P. L.; Wand, A. J. "Sequence-Specific Resonance Assignments for a Designed Four- α -Helix Bundle Protein", **Journal of Biomolecular NMR**, **1998**, 11, 227-228.

Johansson, J. S.; Gibney, B.R.; Skalicky, J. J.; Wand, A. J.; Dutton, P. L. "A Native-Like Three- α -Helix Bundle Protein From Structure Based Redesign: A Novel Maquette Scaffold", **J. Am. Chem. Soc.**, **1998**, 120, 3881-3886.

Gibney, B.R.; Rabanal, F.; Reddy, K. S.; Dutton, P. L. "Effect of Four Helix Bundle Topology on Heme Binding and Redox Properties", **Biochemistry**, **1998**, 37, 4635-4643.

Pilloud, D.L.; Rabanal, F.; Gibney, B.R.; Farid, R. S.; Moser, C. C.; Dutton, P. L. "Self-Assembled Monolayers of Synthetic Hemoproteins on Silanized Quartz", **J. Phys. Chem. B**, **1998**, 102, 1926-1937.

Johansson, J. S.; Gibney, B.R.; Rabanal, F.; Reddy, K. S.; Dutton, P. L. "A Designed Cavity in the Hydrophobic Core of a Four- α -Helix Bundle Improves Volatile Anesthetic Binding Affinity", **Biochemistry**, **1998**, 37, 1421-1429.

Gibney, B.R.; Rabanal, F.; Reddy, K. S.; Dutton, P. L. "Effect of Four Helix Bundle Topology on Heme Binding and Redox Properties", **Biochemistry**, **1998**, 37, 4635-4643.

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Gibney, B.R.; Rabanal, F.; Dutton, P. L. "Synthesis of Novel Proteins", **Curr. Opin. Chem. Biol.**, **1997**, 1, 537-542.

Gibney, B.R.; Johansson, J. S.; Rabanal, F.; Skalicky, J. J.; Wand, A. J.; Dutton, P. L. "Global Topology & Stability, Local Structure & Dynamics in a Synthetic Spin Labeled Four-Helix Bundle Protein", **Biochemistry**, **1997**, 36, 2798-2806.

Gibney, B.R.; Skalicky, J. J.; Rabanal, F.; Wand, A. J.; Dutton, P. L. "Design of a Unique Scaffold for Maquettes", **J. Am. Chem. Soc.**, **1997**, 119, 2323-2324.

Pecoraro, V. L.; Stemmler, A. J.; Gibney, B.R.; Bodwin, J. J.; Wang, H.; Kampf, J. W.; Barwinski, A. "Metallacrowns: A New Class of Molecular Recognition Agents", **Prog. Inorg. Chem.**, K. Karlin, ed., Vol. 45, Chapter 2, Pergamon Press, **1996**, 83-177.

Gibney, B.R.; Wang, H.; Kampf, J. W.; Pecoraro, V. L. "Structural Evaluation and Solution Integrity in the Manganese 12-MC-4 Structural Type", **Inorg. Chem.**, **1996**, 35, 6184-6193.

Gibney, B.R.; Mulholland, S. E.; Rabanal, F.; Dutton, P. L. "Ferredoxin and Ferredoxin-Heme Maquettes", **Proc. Nat. Acad. Sci. U.S.A.**, **1996**, 93, 15041-15046.

Pecoraro, V. L.; Gibney, B.R. "Structural Aspects of Selectivity in Metal-Ligand Interactions In Vivo", **Handbook on Metal-Ligand Interactions in Biological Fluids**, Berthon, G., Ed., Vol. 1, Marcel-Dekker, New York, **1995**, 597.

Gibney, B.R.; Pecoraro, V.L. "Theoretical Aspects of Metal Ion Interactions with Synthetic Carrier Ligands", **Handbook on Metal-Ligand Interactions in Biological Fluids**, Berthon, G., Ed., Vol. 1, Marcel-Dekker, New York, **1995**, 62.

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Gibney, B.R.; Kessissoglou, D.P.; Kampf, J.W.; Pecoraro, V.L. "Copper(II) 12-Metallacrown-4: Synthesis, Structure, Ligand Variability and Solution Dynamics in the 12-MC-4 Structural Motif" **Inorg. Chem.** **1994**, 33, 4840-4849.

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Lah, M.S.; Gibney, B.R.; Tierney, D.L.; Penner-Hahn, J.E.; Pecoraro, V.L. "The Fused Metallacrown Anion $\text{Na}_2\{[\text{Na}_{0.5}[\text{Ga}(\text{salicylhydroximate})_4]_2(\mu_2\text{-OH})_4\}^-$ is An Inorganic Analogue of a Cryptate" **J. Am. Chem. Soc.** **1993**, 115, 5857-5858.